Put this homework in the homework section of your binder!
It is your ticket to re-assess Monday's test if needed

Rationalizing to find a limit (notes, continued)

$$\lim_{x\to 7}\frac{(\sqrt{x+2}-3)}{(x-7)}\cdot\frac{(\sqrt{x+2}+3)}{(\sqrt{x+2}+3)} = \frac{\overset{x-7}{\cancel{x+2-9}}}{\cancel{(x-7)}(\sqrt{x+2}+3)}$$

$$\lim_{x\to 7}\frac{1}{\sqrt{x+2}+3} \qquad \frac{1}{\sqrt{9}+3} = \frac{1}{6}$$

$$\lim_{x \to 4} \frac{\left(x - \sqrt{3x+4}\right)}{4 - x} \cdot \frac{\left(x + \sqrt{3x+4}\right)}{x + \sqrt{3x+4}}$$

$$\frac{x^2 - (3x+4)}{(4-x)(\sim\sim)}$$

$$(-x+4)(-x-1)$$

$$\frac{x^2 - 3x - 4}{\sim\sim} \rightsquigarrow \frac{(x-4)(x+1)}{(4-x)(\sim\sim)}$$

$$\frac{-1\cancel{(-x+4)}(x+1)}{\cancel{(4-x)}(\sim\sim)} \rightsquigarrow \frac{-1(x+1)}{\lim_{x \to 4} x + \sqrt{3x+4}} = -\frac{5}{8}$$

$$\lim_{x\to 2}\frac{x}{x-2} = \frac{2}{0} \text{ !!}$$

A one sided limit:

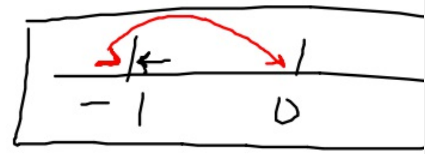
$$\lim_{x\to 2^+}\frac{x}{x-2} = \frac{2^+}{2^+-2} = \frac{2^+}{0^+} = \infty$$

2.0001...

$$\lim_{x\to 2^-}\frac{x}{x-2} = \frac{2^-}{2^- - 2} = \frac{\oplus\, 2^-}{\ominus\, 0^-} = \ominus\,\infty$$

1.999...

$$\lim_{x\to -1}\frac{-3}{x^2+2x+1} = \frac{-3}{0} = -\infty$$



$$\lim_{x\to -1^+}\frac{-3}{(x+1)^2} = \frac{-3}{(-1^+ +1)^2} = \frac{-3}{(0^+)^2} = \frac{-3}{0^+} = -\infty$$

$-0.9999 + 1$

$$\lim_{x\to -1^-}\frac{-3}{(x+1)^2} = \frac{-3}{(-1^- +1)^2} \quad \frac{-3}{(0^-)^2} = \frac{-3}{0^+} = -\infty$$